12 PHARMACOLOGY

12.1 Objectives

12.1.1 Display a working knowledge of the various categories of drugs encountered in toxicological analysis.

12.1.2 Understand the differences in interpretation for medical examiner (ME) cases vs. driving under the influence of drug (DUID) cases. Explain how the same drug concentration may be interpreted differently.

12.1.3 Know and understand the pharmacodynamic and pharmacokinetic properties of major drug classes.

12.1.4 Understand how the therapeutic, toxic and lethal blood concentrations are assigned and used for populations, but may vary for an individual.

12.1.5 Explain the pharmacodynamic effects on human behavior and performance using blood drug concentrations as it pertains to court testimony and DUID cases.

12.1.6 Understand the process of postmortem redistribution, the interpretation of cases where this occurs, and which drugs are expected to undergo this process.

12.2 Estimated Time: Four Months

12.3 Methods of Instruction

12.3.1 Lectures

12.3.1.1 Central nervous system depressants (e.g. alcohol, barbiturates, benzodiazepines)

12.3.1.2 Central nervous system stimulants (e.g. amphetamine, cocaine, methamphetamine, MDMA)

12.3.1.3 Narcotic analgesics (e.g. codeine, oxycodone, heroin, methadone, morphine)

12.3.1.4 Hallucinogens (e.g. LSD)

12.3.1.5 Others (e.g. marijuana, PCP)

12.3.2 Literature Review

12.3.2.1 Baselt, R.C. and R.H. Cravery. *Disposition of Toxic Drugs and Chemicals in Man*, 6th Ed., Chemical Toxicology Institute, US, 2001.

12.3.2.2 Toxicology Technical Procedures Manual

12.3.2.3 Baselt, R.C. *Drug Effects on Psychomotor Performance.* Biomedical Publications, CA, 2001.

12.3.2.4 Karch, S. *Drug Abuse Handbook.* Boca Raton, FL: CRC Press, 1998, pp 859-985.

12.3.2.5 Moffat, A.C., editor. *Clarke's Analysis of Drugs and Poisons,* 3rd edition. London: The Pharmaceutical Press, 2004, pp 53-67, 80-108, 172-188.

12.4 Evaluation

12.4.1 Written Exam

12.4.1.1 This will be administered as a “take home” exam.

12.4.2 Courtroom Exercise

12.4.2.1 The Trainee must be capable of answering questions on this Module such as would be expected in a courtroom scenario.

12.5 Examination Questions

12.5.1 Make a table listing at least all drugs analyzed in DUID cases. Include therapeutic concentrations, toxic concentrations, lethal concentrations, half-life, detection time in blood, detection time in urine, drug class and general analytical technique.

12.5.2 Discuss the effects of various blood drug concentrations on human behavior and performance for the following drug classes:

12.5.2.1 benzodiazepines

12.5.2.2 barbiturates

12.5.2.3 amphetamines

12.5.2.4 analgesics

12.5.3 Discuss drug metabolism using the above table as a guide.

12.5.4 Discuss drug interpretation for drugs undergoing postmortem redistribution.

♦ **End**